BOSTER BIOLOGICAL TECHNOLOGY
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Anti-MCM3 Antibody Picoband®

Catalog Number: PA1651

About MCM3

MCM3 (MINICHROMOSOME MAINTENANCE, S. CEREVISIAE, HOMOLOG OF, 3), also called RLFB or P1 PROTEIN, is a protein that in humans is encoded by the MCM3 gene. MCM3 is one of the highly conserved mini-chromosome maintenance proteins (MCM) that are involved in the initiation of eukaryotic genome replication. The MCM3 gene is mapped to 6p12.2. This protein is a subunit of the protein complex that consists of MCM2-7. It has been shown to interact directly with MCM5/CDC46. This protein also interacts with, and thus is acetlyated by MCM3AP, a chromatin-associated acetyltransferase. The acetylation of this protein inhibits the initiation of DNA replication and cell cycle progression.

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Overview

Product Name	Anti-MCM3 Antibody Picoband®
Reactive Species	Human, Mouse, Rat
Description	Boster Bio Anti-MCM3 Antibody catalog # PA1651. Tested in Flow Cytometry, IF, IHC, ICC, WB applications. This antibody reacts with Human, Mouse, Rat. The brand Picoband indicates this is a premium antibody that guarantees superior quality, high affinity, and strong signals with minimal background in Western blot applications. Only our best-performing antibodies are designated as Picoband, ensuring unmatched performance.
Application	Flow Cytometry, IF, IHC, ICC, WB
Clonality	Polyclonal
Formulation	Each vial contains 4 mg Trehalose, 0.9 mg NaCl and 0.2 mg Na2HPO4.
Storage Instructions	Store at -20˚C for one year from date of receipt. After reconstitution, at 4˚C for one month. It can also be aliquotted and stored frozen at -20˚C for six months. Avoid repeated freeze-thaw cycles.
Host	Rabbit
Uniprot ID	P25205

Technical Details

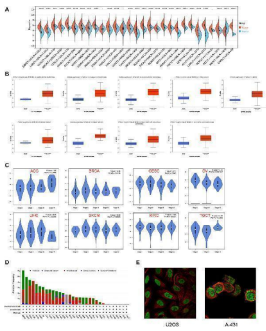
Immunogen	A synthetic peptide corresponding to a sequence at the N-terminus of human MCM3, identical to the related rat and mouse sequences.

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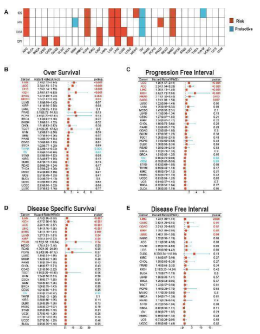
Cross Reactivity	No cross-reactivity with other proteins
Isotype	Rabbit IgG
Form	Lyophilized
Concentration	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml.
Purification	Immunogen affinity purified.
Suggested Dilutions	Western blot, 0.1-0.5ug/ml, Human, Mouse, Rat Immunohistochemistry (Paraffin-embedded Section), 2-5ug/ml, Human, Rat Immunocytochemistry/Immunofluorescence, 5ug/ml, Human Flow Cytometry (Fixed), 1-3ug/1x10^6 cells, Human Note: For flow cytometry (FCM), suitable for fixed cells only. Not suitable for FACS or surface flow cytometry using live cells.

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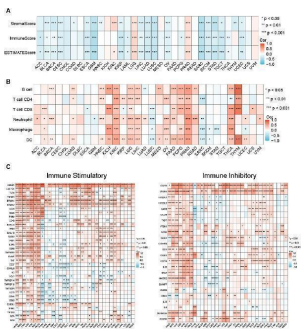
Anti-MCM3 Antibody Picoband® (PA1651) Images



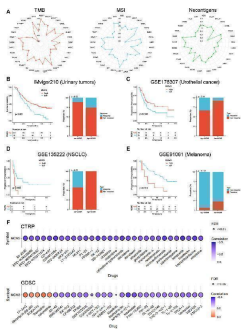
Expression patterns of MCM3 in pan-cancer. (A) Differences in MCM3 between tumor and normal tissues based on TCGA and GETx data. (B) Comparison of protein levels based on CPTAC data. (C) Clinical correlation analysis based on GEPIA database. (D) The genomic alteration of MCM3 in pan-cancer. (E) Immunofluorescence results showed the localization of MCM3 in cell lines. **** p < 0.0001.Index in PubMed under a CC BY license. PMID: 38698811



Prognostic value of MCM3 in pan-cancer. (A) The heatmap shows results of univariate Cox regression analysis. (B) Forest plot of MCM3 expression and OS across cancers. (C) Forest plot of MCM3 expression and PFI across cancers. (D) Forest plot of MCM3 expression and DSS across cancers. (E) Forest plot of MCM3 expression and DFI across cancers.Index in PubMed under a CC BY license. PMID: 38698811



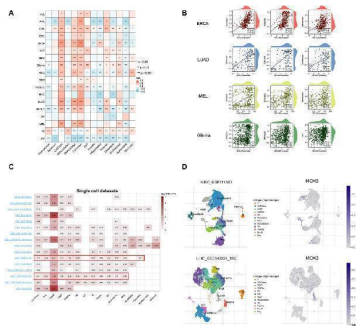
Relationship between MCM expression and immune-related features in pan-cancer. (A) MCM3 expression and tumor microenvironment relate parameters. (B) MCM3 expression and immune cell infiltration. (C) MCM3 expression and immune checkpoints. * p < 0.05, ** p < 0.01, *** p < 0.001.Index in PubMed under a CC BY license. PMID: 38698811

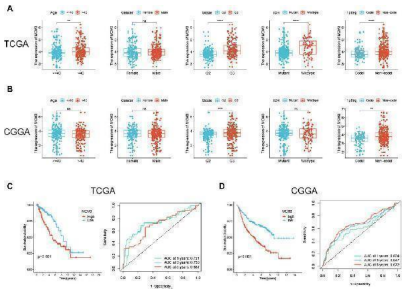


Immunotherapy and drug sensitivity analysis. (A) Relationship between MCM3 expression and TMB, MSI, and neoantigens. (B–E) Prognostic significance of MCM3 and proportion of immunotherapy response between high- and low-MCM3 groups in four cohorts receiving ICB therapy. (F) Drug sensitivity analysis of MCM3 based on CTPR and GDSC data. * p < 0.05, ** p < 0.01, *** p < 0.001.Index in PubMed under a CC BY license. PMID: 38698811

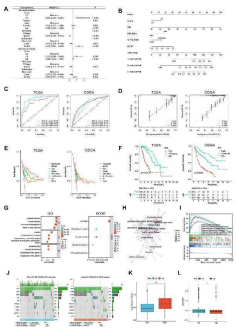
Single-cell analysis of MCM3. (A) Correlation between MCM3 and 14 biological functions. (B) The top three functions in BRCA, LUAD, MEL and glioma. (C) Datasets of single-cell expression of MCM3 from TISCH website. (D) Distribution of MCM3 among cell types in the GSE111360 and GSE140228 datasets. * p < 0.05, ** p < 0.01, *** p < 0.001.Index in PubMed under a CC BY license. PMID: 38698811

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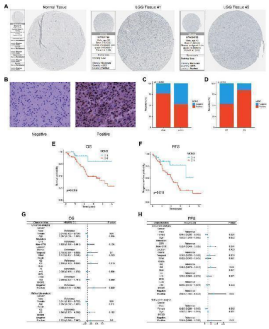




Correlation between MCM3 expression and clinical features and prognosis of LGG. (A, B) Relationship between MCM3 and clinical features in TCGA and CGGA cohorts. (C, D) Evaluation of the ability of MCM3 expression to predict prognosis in TCGA and CGGA cohorts. ns: no significance, ** p < 0.01, *** p < 0.001, **** p < 0.0001.Index in PubMed under a CC BY license. PMID: 38698811



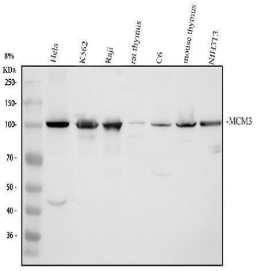
Construction of a prognostic nomogram and analysis of MCM3 related functions in LGG. (A) Univariate/multivariate Cox analysis was performed based on TCGA cohort. (B) Establishment of a prognostic nomogram based on multivariate analysis results. (C–F) Nomogram model evaluation, including timeROC, calibration, DCA and KM curves. (G) GO and KEGG analyses based on differentially expressed genes in TCGA. (H) An interaction network between GO and KEGG. (I) The GSEA analysis in TCGA cohort. (J) The waterfall map shows the top 10 genes with the highest mutation probability. (K, L) TMB and TIDE score were compared between the two groups. ** p < 0.01, **** p < 0.0001.Index in PubMed under a CC BY license. PMID: 38698811



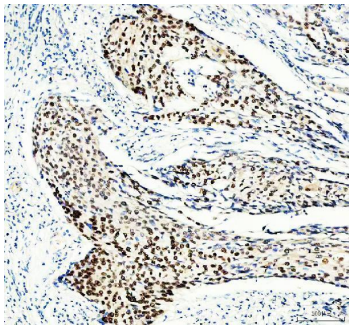
Validation of the association between MCM3 and clinical features and prognosis of LGG. (A) MCM3 protein expression in normal and tumor tissues from HPA database. (B) Representative plots of negative and positive immunohistochemical results. (C, D) Relationship between MCM3 expression and tumor size and grade. (E, F) Survival curves for OS and PFS in clinical cohort. (G, H) Univariate and multivariate Cox regression analysis for OS and PFS.Index in PubMed under a CC BY license. PMID: 38698811

Western blot analysis of MCM3 using anti-MCM3 antibody (PA1651). Electrophoresis was performed on a 8% SDS-PAGE gel at 80V (Stacking gel) / 120V (Resolving gel) for 2 hours. The sample well of each lane was loaded with 30 ug of sample under reducing conditions. Lane 1: human Hela whole cell lysates, Lane 2: human K562 whole cell lysates, Lane 3: human Raji whole cell lysates, Lane 4: rat thymus tissue lysates, Lane 5: rat C6 whole cell lysates, Lane 6: mouse thymus tissue lysates, Lane 7: mouse NIH/3T3 whole

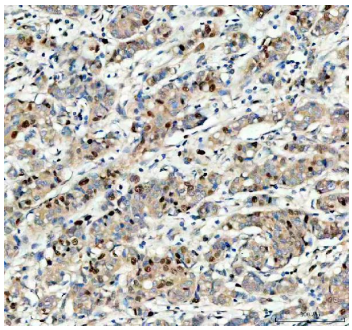
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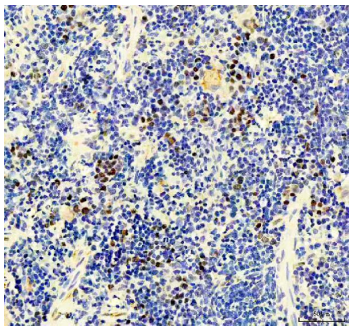
cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-MCM3 antigen affinity purified polyclonal antibody (PA1651) at 0.5 ug/mL overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody (Catalog # BA1054) at a dilution of 1:5000 for 1.5 hour at RT. The signal is developed using an ECL Plus Western Blotting Substrate (Catalog # AR1196-200) with Tanon 5200 system. A specific band was detected for MCM3 at approximately 100-110 kDa. The expected band size for MCM3 is at 91 kDa.



IHC analysis of MCM3 using anti-MCM3 antibody (PA1651). MCM3 was detected in a paraffin-embedded section of human cervical cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-MCM3 Antibody (PA1651) overnight at 4°C. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Rabbit IgG Super Vision Assay Kit (Catalog # SV0002) with DAB as the chromogen.



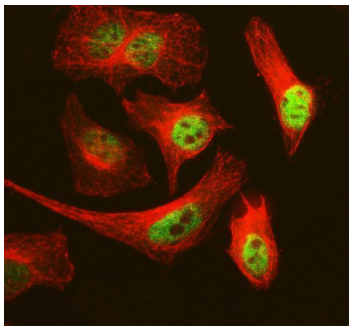
IHC analysis of MCM3 using anti-MCM3 antibody (PA1651). MCM3 was detected in a paraffin-embedded section of human breast cancer tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-MCM3 Antibody (PA1651) overnight at 4°C. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Rabbit IgG Super Vision Assay Kit (Catalog # SV0002) with DAB as the chromogen.



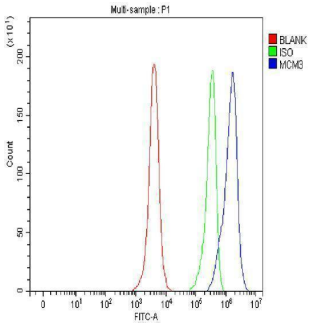
IHC analysis of MCM3 using anti-MCM3 antibody (PA1651). MCM3 was detected in a paraffin-embedded section of rat spleen tissue. Heat mediated antigen retrieval was performed in EDTA buffer (pH 8.0, epitope retrieval solution). The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 2 ug/ml rabbit anti-MCM3 Antibody (PA1651) overnight at 4°C. Peroxidase Conjugated Goat Anti-rabbit IgG was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using HRP Conjugated Rabbit IgG Super Vision Assay Kit (Catalog # SV0002) with DAB as the chromogen.

IF analysis of MCM3 using anti-MCM3 antibody (PA1651) and anti-Tubulin Alpha antibody (M03989-3). MCM3 was detected

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in immunocytochemical section of Hela cell. Enzyme antigen retrieval was performed using IHC enzyme antigen retrieval reagent (AR0022) for 15 mins. The cells were blocked with 10% goat serum. And then incubated with 5 ug/mL rabbit anti-MCM3 Antibody (PA1651) and mouse anti-Tubulin Alpha antibody (M03989-3) overnight at 4°C. DyLight®488 Conjugated Goat Anti-Rabbit IgG (BA1127) and Cy3 Conjugated Goat Anti-Mouse IgG (BA1031) were used as secondary antibody at 1:500 dilution and incubated for 30 minutes at 37°C. The section was counterstained with DAPI. Visualize using a fluorescence microscope and filter sets appropriate for the label used.



Flow Cytometry analysis of Hela cells using anti-MCM3 antibody (PA1651). Overlay histogram showing Hela cells stained with PA1651 (Blue line). To facilitate intracellular staining, cells were fixed with 4% paraformaldehyde and permeabilized with permeabilization buffer. The cells were blocked with 10% normal goat serum. And then incubated with rabbit anti-MCM3 Antibody (PA1651, 1 ug/1x106 cells) for 30 min at 20°C. DyLight®488 conjugated goat anti-rabbit IgG (BA1127, 5-10 ug/1x106 cells) was used as secondary antibody for 30 minutes at 20°C. Isotype control antibody (Green line) was rabbit IgG (1 ug/1x106) used under the same conditions. Unlabelled sample without incubation with primary antibody and secondary antibody (Red line) was used as a blank control.

Anti-MCM3 Antibody

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